2. METHODOLOGY

This section describes the methodology used in this analysis, the key assumptions and the data that provide the basis for the assessment. The methods used for this analysis are the same as those employed in the 1998 fee adequacy assessment (DOE 1998e).

The evaluation of fee adequacy is based on the principle of full-cost recovery presented in Section 302 of the NWPA, under which all costs related to the waste disposal services will be paid for by the owners and generators of SNF and HLW. This principle of full-cost recovery underlies the basic analytical methodology used by the Department. The methodology for projecting the adequacy of the fee uses a forecasted revenue stream of fees paid into the NWF by the utilities, and compares it to the disbursement forecast to determine the sufficiency of funds. Annual surpluses are invested in Treasury securities. Annual shortfalls in revenue will be met by redeeming securities held by the NWF or by borrowing from the U.S. Treasury, if necessary.

A cash flow analysis was used. This includes projections of the ongoing kWh fees and projections of when deferred one-time fee payments will be received by the NWF. In addition, this analysis uses the estimated expenditure profile, escalated to YOE dollars, from the 1999 TSLCC analysis (CRWMS M&O 1999b). For each year, the cash flow technique takes the previous year's fund balance, adds the current year revenues, and subtracts the escalated expenditures. This provides an annual analysis of cash flows, in YOE dollars, and annual NWF balances. It also calculates the income from investing the NWF Treasury Bond portfolio, using a forecasted nominal rate of return. This technique also would take into account interest expenses from borrowing for cases where the balance becomes negative, if required. Results are de-escalated to constant 1999 dollars, consistent with the TSLCC (CRWMS M&O 1999b), using the Consumer Price Index (CPI) to eliminate the effects of escalation and the distortions resulting from erosion of purchasing power of distant future dollars.

The investment part of the model starts with the projected coupon and maturity cash flows from the investments held by the NWF on September 30, 1998. At that time the Fund had a market value of $8.6 Billion and a cash balance value, on which the flows are based, of $7.2 Billion. The starting balance of the NWF includes the face value of bills, notes, and bonds, and the purchase price plus amortized discount of zero-coupon bonds. The NWF also properly reflects the net effect of all fees paid, interest earned, and disbursements made to fund historical program costs. The NWF balance provides the starting point for the forward-looking analysis of program cash flows to determine fee adequacy. The difference between the market value and cash balance is a net unamortized premium of $0.5 Billion and unrealized gains in market value of $0.9 Billion. Starting with the cash balance value instead of the market value is immaterial, because all investments are assumed to be held to maturity. Using the projected cash flows adds realism to the model, although some investments will be redistributed based on the cost projections in the 1999 TSLCC (CRWMS M&O 1999b). It is assumed that all future investments are purchased at 100 percent of the face value and are held until maturity.

This cash flow analysis methodology produces the same results as a net present value analysis when the same interest rates are used. The cash flow analysis provides more visibility into how fee revenues, investment income, costs, and the NWF balance vary by year. This methodology

allows cash flow modeling for the current fund portfolio of U.S. Treasury instruments, using the actual investment returns. In addition, this methodology for the 1999 Fee Adequacy Assessment uses a series of interest and inflation rates, during the period of 1998 through 2042, for investment of income and reinvestment of maturing securities, as opposed to applying a single average rate.

The series of interest and inflation rates used in this analysis are extracted from the *Cost Escalation and Interest Rates for 1999* (CRWMS M&O 1999a). The cash flow modeling of investment returns used the 10-year and 1-year Treasury Note series to approximate the investment returns on the matching and contingency portions of the NWF portfolio. The 10-year rate is used for modeling the matching portfolio, as the actual average maturity on this portfolio is closer to 10-years than 30-years, which is the next available rate for which projections are available. Also, the rate differential between the 10-year and 30-year Treasure Notes is small. The 1-year Treasury Note was used for modeling the contingency fund. This rate was chosen as a conservative approximation of the average maturity of the current contingency fund.